

given by way of example only and with reference to the accompanying drawings in which:

[0073] **FIG. 1:** Is a diagrammatic view of a combined in-car navigation and entertainment display. A viewer (1) looking at the display (5) in the direction shown sees a movie being played (3), whilst a viewer (2) looking at the display in the direction shown sees the navigation system (4).

[0074] **FIG. 2:** Shows a diagrammatic view of the multi-layered embodiment where an image (3) is displayed on the first layer (5) with an optimum viewing direction (6) and an image (4) is displayed on the second layer (7) with an optimum viewing direction (8).

[0075] **FIG. 3:** Is a diagrammatic view of a multi-layer multi view embodiment of the present invention in which the front layer is viewable only by one observer and the rear layer is viewable by both observers.

[0076] **FIG. 4:** Is a diagrammatic view of a multi-layer multi view embodiment of the present invention in which the front display layer is viewable by both observers and two interlaced images displayed on the rear display layer are presented to different observers.

BEST MODES FOR CARRYING OUT THE INVENTION

[0077] In a first preferred embodiment a single layer display is used to at least two different images or display contents each image/display-content being presented to a different viewing angle to the images/display-content.

[0078] Figure one illustrates single layer multi view display used as an in-car navigation/entertainment device. A viewer (1) looking at the display (5) in the direction shown sees a movie being played (3), whilst a second viewer (2) looking at the display in the direction shown sees the image of a navigation system (4). In this embodiment the display layer (5) is adapted such that it comprises interlaced pixels of two different viewing angles. The movie is displayed on pixels of one viewing angle and the navigation images are displayed on pixels of the other viewing angle.

[0079] In a further preferred embodiment a multi-layered multi view device is used to display at least two different images or display contents each image/display-content being presented to a different viewing angle to the images/display-content.

[0080] Figure two illustrates a combined in-car navigation and entertainment display. A first layer with optimum viewing direction (6) is placed substantially collinear and as close to a second layer with an optimum viewing direction (8). In most cases there will be a diffusion layer (9) to abate moire interference. The displays can be back lit using either direct view lamps or a light pipe (10). A viewer viewing at an angle (6) will see image (3), and a viewer looking in direction (8) will see image (4).

[0081] In a further preferred embodiment a multi-layered multi view device is used to display layered images to one viewer and a single image to another viewer.

[0082] Figure illustrates a multi layered multi view device. An image (15) is displayed on the first layer (13) with an

optimum viewing direction (30) and an image (14) is displayed on a second layer (11) through a viewing angle enhancer (12) which expands the viewing angle (31) of second layer (11) with an optimum viewing angle of (31), such that a viewer (17) inline with the viewing angle of the first layer (30) would see a combined image (19) with the image (14) from the second layer (11) would appear at distance behind the image (15) from the first layer (13) and such that a second simultaneous viewer (16) outside the viewing angle (30) of the first layer would see an image (18) only represented by the second layer (11).

[0083] In a further preferred embodiment a multi-layered multi view device is used in combination with an interlaced optical film or lens

[0084] **FIG. 4** illustrates a diagrammatic view of the multi-layered privacy embodiment where image (25) is displayed on the first layer (22) and multiple images (23, 24) are displayed on the back layer (20) such that the images are interlaced to match a lens stripe pattern (21) allowing a viewer (29) in position inline with pattern (32) matching the image (23) on the rear layer (20) Would see a composite image (29) compromising the foreground image (25) in front of a background image (23) that is aligned with the viewers (27) position, while allowing a second simultaneous viewer in position inline with a pattern (33) matching the image (24) on the rear layer (20) would see a composite image (28) compromising the foreground image (25) in front of a background image (24) that is aligned with the viewer's position.

[0085] Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof.

1. A multiple layer display comprising:

a first substantially planar display layer,

a second substantially planar display layer overlapping at least a portion of the first display layer and positioned substantially parallel thereto, the first and second display layers capable of displaying first and second video images respectively thereon and the transparency of the second layer being adjustable to control the visibility of the overlapping portion of the first display layer through the second display layer,

wherein the first and second display layers include image directing means which direct the images displayed thereon in first and second directions, or ranges of directions, respectively so that the images displayed on the first and second display layers are viewable only at first and second viewing angles or ranges of viewing angles respectively, and

wherein the first and second viewing angles or ranges of viewing angles are not the same.

2. A multiple layer display as claimed in claim 1, wherein the first and second display layers are both liquid crystal display layers.

3. A multiple layer display as claimed in claim 1, wherein a diffusion means is provided between the overlapping portions of the first and second display layers to reduce moire interference therebetween.